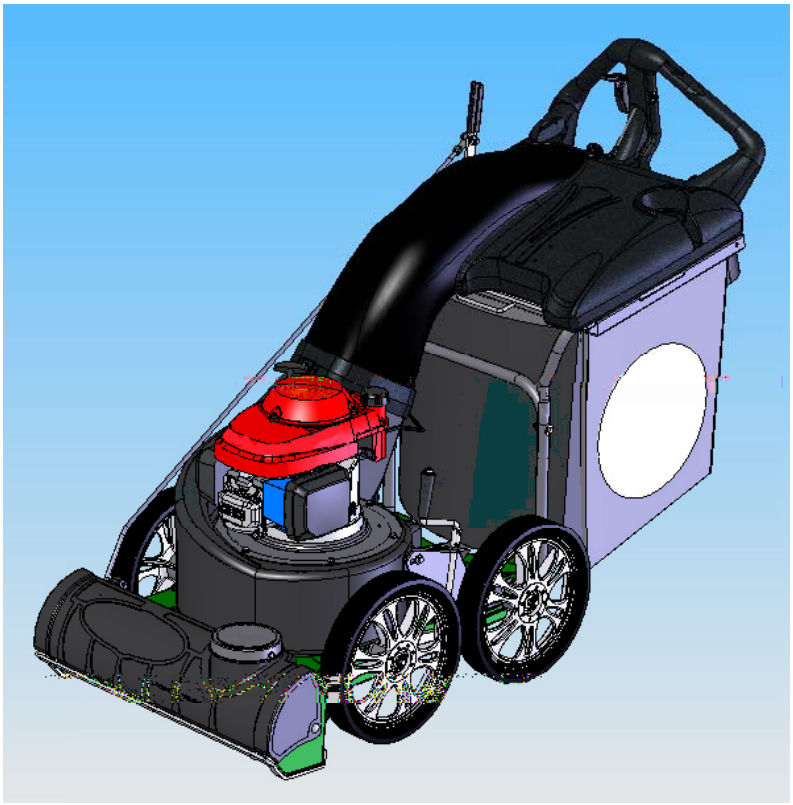
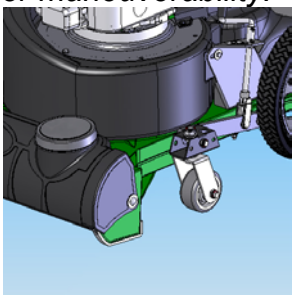
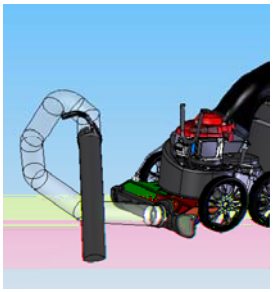
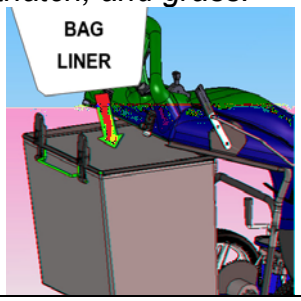
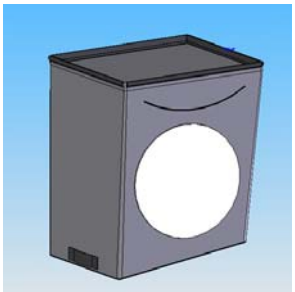


BILLY GOAT® MV650H PUSH Vacuum Owner's Manual

Accessories

Caster Kit	***Hose Kit***	***Bag Liner Kit***	***Felt Bag Kit***
Use on hard surface for maneuverability. 	*For vacuuming hard to reach areas.* 	*To collect leaves, thatch, and grass.* 	*Use on all dusty conditions.* 
P/N 840129	***P/N 840116***	***P/N 840134***	***P/N 840194***

ABOUT THIS MANUAL

THANK YOU for purchasing a BILLY GOAT ® *MV Vacuum*. Your new machine has been carefully designed and manufactured to provide years of reliable and productive service. This manual provides complete operating and maintenance instructions that will help to maintain your MV Vacuum in top running order. Read this manual carefully before assembling, operating, or servicing your equipment.

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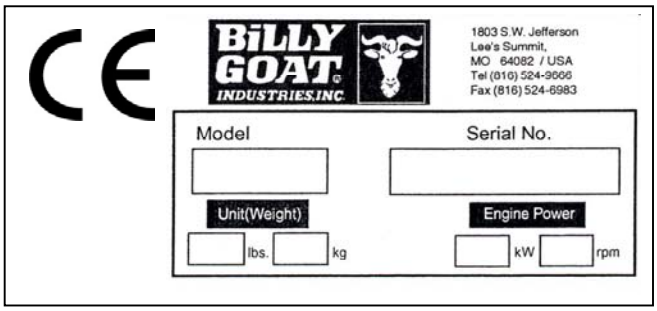
SERIAL PLATE DATA

Record the model number, serial number, date of purchase, and where purchased.

Purchase Date: _____

Purchased From: _____



MV 650 SERIES SPECIFICATIONS

	MV650
Engine Type	Honda GSV190AA1A
Horsepower	6.5 (4.85 kW)
Fuel Capacity	1.6 qt (1.5 L)
Oil Capacity	0.69 qt (0.65L)
Engine Weight	28 lbs (12.7 kg)
Unit Weight	157 lbs (71.2 kg)
Shipping Weight	180 lbs (81.7 kg)
Overall Dimensions	28" Wide x 62.5" Long x 45.5" High
Maximum Operating Slope	20°
Lw(a) at Operator position	103 dB(a) at 3320 rpm
Lp(a) at Operator position	83 dB(a) at 3320 rpm

COMMON REPLACEMENT PARTS

- Bag. P/N 840189. Original equipment replacement bag.
- Skid. P/N 840041. Nozzle wear guard skid.

GENERAL SAFETY INSTRUCTIONS and SYMBOLS

The safety symbols shown below are used throughout this manual. You should become familiar with them before assembling, operating or servicing this equipment.

This symbol indicates important information that will prevent injury to yourself or others.

This symbol indicates ear protection is recommended when operating this equipment.

This symbol indicates eye protection is recommended when operating this equipment.

This symbol indicates gloves should be worn when servicing this equipment.

This symbol indicates that this manual and the engine manufacturer's manual should be read carefully before assembling, operation, or servicing this equipment.

This symbol indicates important information that will prevent damage to your BILLY GOAT ® MV Vacuum.

This symbol indicates the engine oil level should be checked before operating this equipment.

Read and make sure you thoroughly understand the following safety precautions before assembling, operating or servicing this equipment:

READ this manual and the engine manufacturer's manual carefully before assembling, operating, or servicing this equipment.

EAR PROTECTION is recommended when operating this equipment.

EYE PROTECTION is recommended when operating this equipment.

EXHAUST from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

DO NOT operate this equipment on any unimproved forested, brushy, or grass covered land unless a spark arrester is installed on the muffler as required by Section 4442 of the California Public Resources Code. The arrester must be maintained in good working order. Other states may have similar laws. Federal laws apply on federal lands.

DO NOT run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless and possibly fatal poison.

WARNING:

DO NOT run this equipment indoors or in any poorly ventilated area. Refueling outdoors is recommended.

DO NOT refuel this equipment while the engine is running. Allow engine to cool for at least two minutes before refueling.

DO NOT store gasoline near an open flame.

DO NOT remove gas cap while engine is running.

DO NOT start or operate engine if strong odor of gasoline is present.

DO NOT start or operate engine if gasoline is spilled. Move equipment away from spill until gasoline has completely evaporated.

DO NOT smoke while filling the fuel tank.

DO NOT check for spark with spark plug or spark plug wire removed. Use an approved spark tester.

DO NOT operate engine without a muffler. Inspect muffler periodically and replace if necessary. If equipped with muffler deflector, inspect deflector periodically and replace if necessary.

DO NOT operate engine with grass, leaves or other combustible material near the muffler.

DO NOT touch muffler, cylinder, or cooling fins when hot. Contact with hot surfaces may cause severe burns.

DO NOT leave equipment unattended while in operation.

DO NOT park equipment on a steep grade or slope.

DO NOT operate equipment with bystanders in or near the work area.

DO NOT allow children to operate this equipment.

DO NOT operate equipment with guards removed.

DO NOT operate equipment near hot or burning debris or any toxic or explosive materials.

DO NOT operate equipment on slopes greater than specified in Specifications section of this manual.

ALWAYS remove spark plug wire when servicing equipment to prevent accidental starting.

ALWAYS check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

ALWAYS keep hands and feet away from moving or rotating parts.

ALWAYS store fuel in approved safety containers.

SOUND DATA

SOUND LEVEL 103 Dba at Operator Position

Sound tests were conducted in accordance with 2000/14/EC, as well as ISO 11094, and were performed on 5-17-2005 under the conditions listed below.

NOTE Sound power level listed is the highest value for any model covered in this manual. Please refer to serial plate on the unit for the sound power level for your model.

General Conditions:	Sunny
Temperature:	66.2°F (19°C)
Wind Speed:	8.5 mph (13.7kph)
Wind Direction:	South Southwest
Humidity:	59%
Barometric Pressure:	29.9" Hg (101.35kPa)

VIBRATION DATA

VIBRATION LEVEL 1.43g(14.00m/s$^{2)}$

Vibration levels at the operator's handles were measured in the vertical, lateral and longitudinal directions using calibrated vibration test equipment. Tests were performed on 5-24-2006 under the conditions listed below.

General Conditions:	Sunny
Temperature:	73.7°F (23.2°C)
Wind Speed:	8.05 mph (3.6m/s)
Wind Direction:	South
Humidity:	83.5%
Barometric Pressure:	29.91" Hg (101.31 kPa)

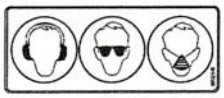
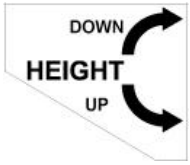
INTENDED USE

Your BILLY GOAT ® *MV Vacuum* is designed for vacuuming leaves, grass clippings, and other types of organic litter, as well as, debris mixed with cans, bottles and small amounts of sand; however, vacuuming cans, bottles and sand will affect the longevity of your machine.
Like all mechanical tools, reasonable care must be used when operating the machine.
Do not operate if excessive vibration occurs. If excessive vibration occurs, shut engine off immediately and check for damaged or worn impeller, loose impeller bolt, loose impeller key, loose engine or lodged foreign

objects. Note: See parts list for proper impeller bolt torque specifications. (See trouble shooting section on page 25).

INSTRUCTION LABELS

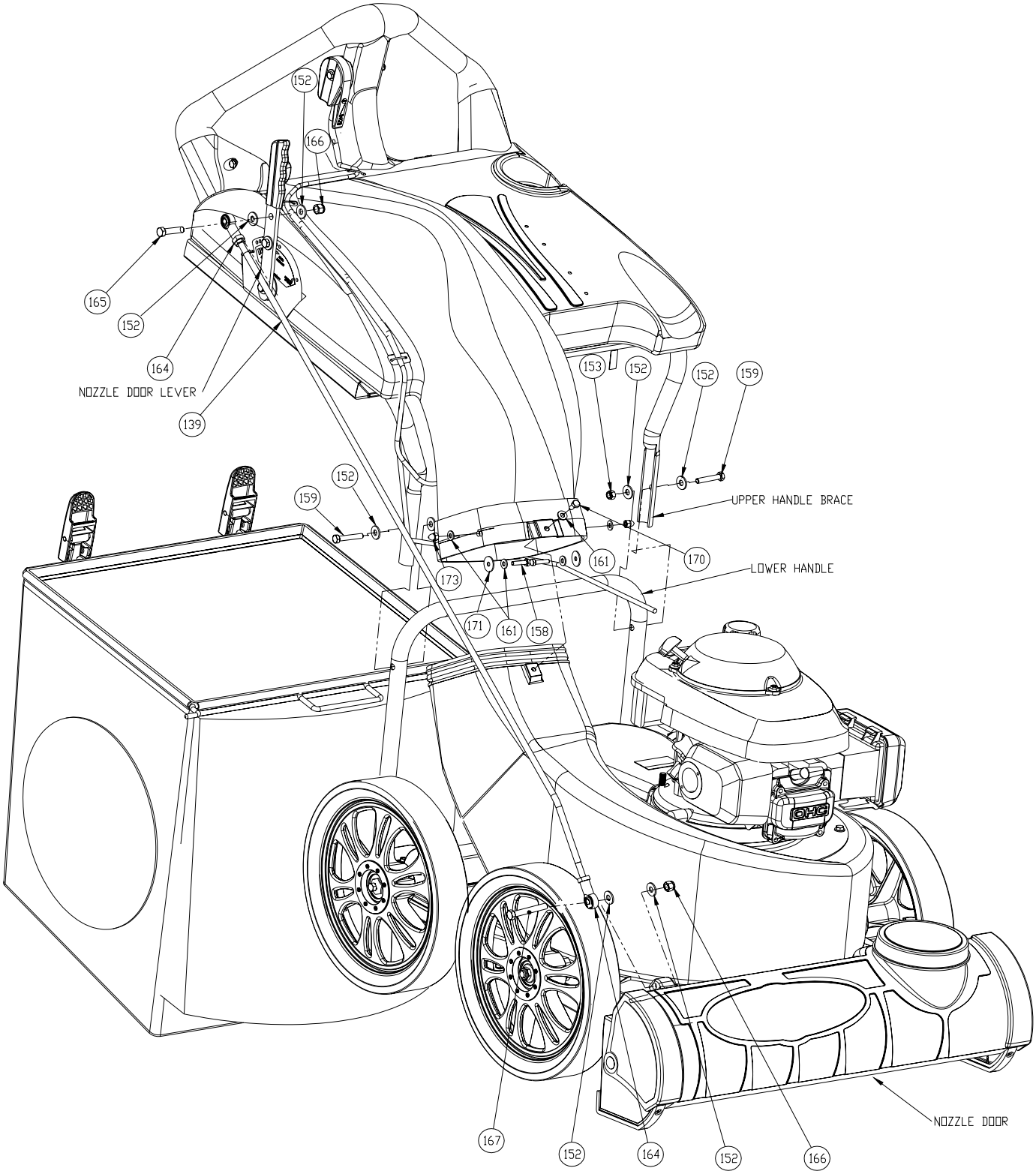
The labels shown below were installed on your BILLY GOAT ® MV Vacuum. If any labels are damaged or missing, replace them before operating this equipment. Item numbers from the Illustrated Parts List and part numbers are provided for convenience in ordering replacement labels. The correct position for each label may be determined by referring to the Figure and Item numbers shown.

 PN 400268 (See Figure 3 Item 55)	 PN 890254 (See Figure 4 Item 162)	 PN 840054 (See Figure 1 Item 34)
 PN 400424 (See Figure 1 Item 11)	 PN 810736 (See Figure 4 Item 174)	 PN 890301 (See Figure 4 Item 163)
 PN 840080 (See Figure 4 Item 175)		

ENGINE LABELS

CONTROLS

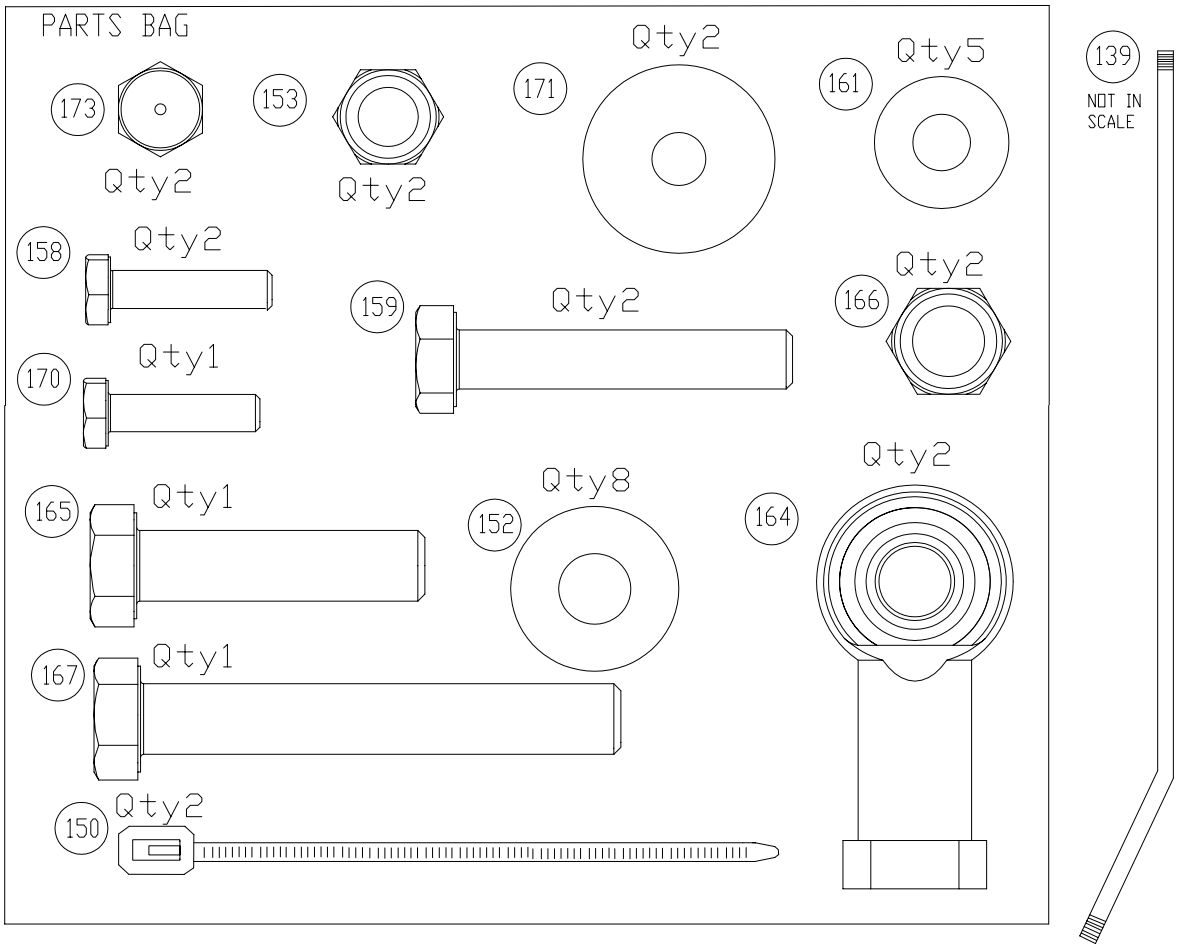
PN 840045
(See Figure 3 Item 57)



MV Vacuum Assembly Drawing

PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
139	840061	ROD LIFT NOZZLE DOOR	1
150	900407	TY-WRAP	2
152	8171003	WASHER 5/16 FLATWASHER Z/P	8
153	8160002	LOCKNUT 5/16-18	2
158	8041006	SCREWCAP 1/4-20 X 1" ZP	2
159	8041031	SCREWCAP 5/16-18 X 1.75 ZP	2
161	8172007	WASHER 1/4 SAE ZP	5
164	400886	ROD END BALL JOINT 3/8 NF	2
165	8041052	SCREW CAP 3/8-16X1 1/2 ZP	1
166	8160003	LOCKNUT 3/8-16	2
167	8041056	SCREWCAP 3/8"-16X2 1/2" ZP	1
170	8041004	SCREWCAP 1/4"-20X3/4" HCS ZP	1
171	8172019	WASHER, FENDER, 1/4 ZP	2
173	840071	NUT ACORN 1/4-20	2



ASSEMBLY INSTRUCTIONS

Your BILLY GOAT ® *MV Vacuum* was shipped in one carton, completely assembled except for the Hood/Upper Handle Assembly. Mounting hardware for the Hood/Upper Handle Assembly is temporarily installed on the lower handle and the Housing assembly.

READ all safety instructions before assembling unit.
TAKE CAUTION when removing the unit from the box the Hood/Upper Handle Assembly is attached to the unit by cables.

Remove unit from carton. Make sure the following items that have been packed with unit:

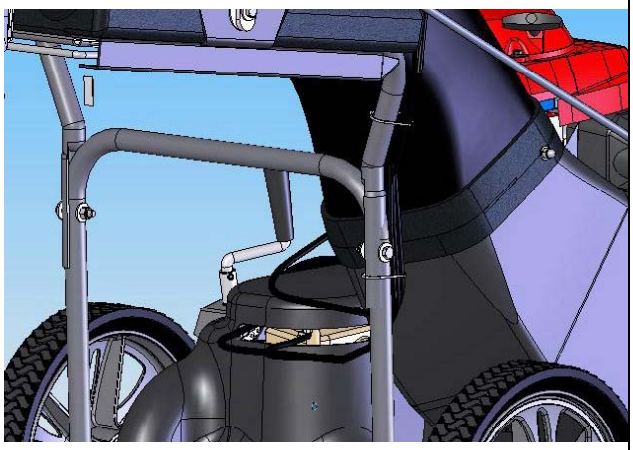
Parts bag P/N 840190

- ☐ Owner's Manual, P/N 840186
- ☐ Declaration of Conformity, P/N 840204
- ☐ Honda Engine Manual
- ☐ Warranty Card, P/N 400972
- ☐ Ty-Wraps (2 ea)
- ☐ Hardware Bag P/N 840190

WARNING: **DISCONNECT** spark plug wire before assembling unit.

1. Attach hood assembly to the housing then hold in place during the step 2.

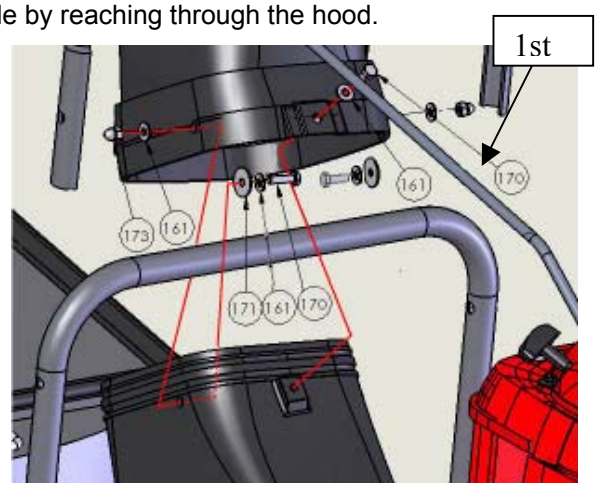
NOTE: BE SURE ALL CABLES ARE ROUTED ON THE UNDERSIDE OF THE HOOD AND HOUSING.



2. Install item #170 center bolt first when aligned with a nut on the housing.

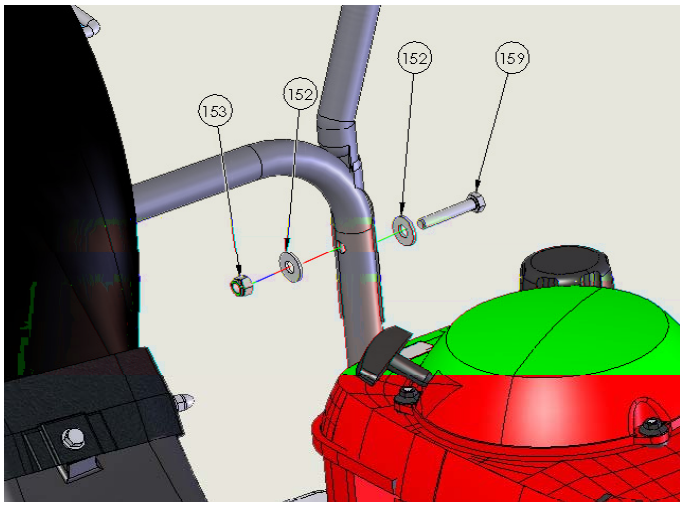
3. Attach rest of hood assembly to the housing using corresponding hardware.

NOTE: You will have to insert the bolt/washer from the inside by reaching through the hood.



TOOLS REQUIRED - Two 7/16" wrenches.

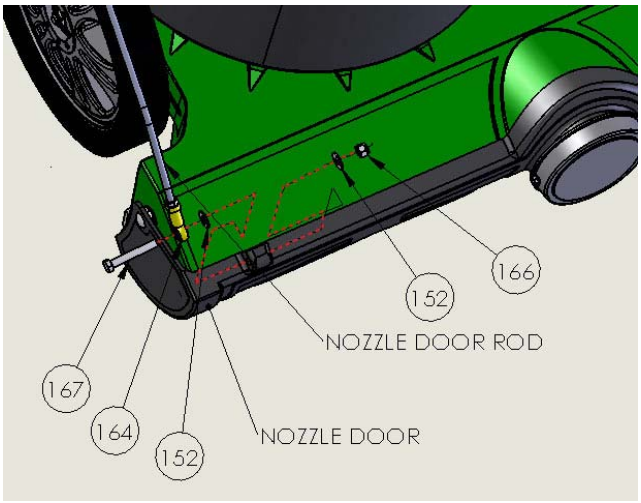
4. Attach upper handle brace to lower handle using corresponding hardware. Then repeat this step on the other side.



TOOLS REQUIRED - Two 1/2" wrenches.

5. Attach rod end (164) to the nozzle door rod then secure in place by tightening jam nut.

6. Attach nozzle door rod to the nozzle door using corresponding hardware.
NOTE: It is easier to do this with nozzle door closed.

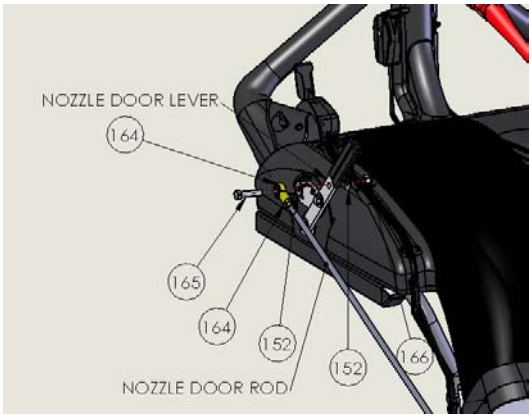


TOOLS REQUIRED - Two 9/16" wrenches.

7. Attach rod end to rod (as in step 5).

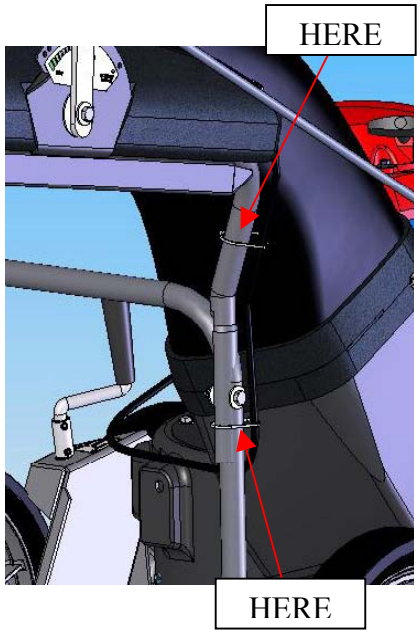
8. Attach nozzle door rod to the lever with nozzle door closed and lever in hose kit position.

NOTE: Check to see nozzle door open and close all the way (see page 15). Tighten or loosen the rod end (164) for any adjustments.



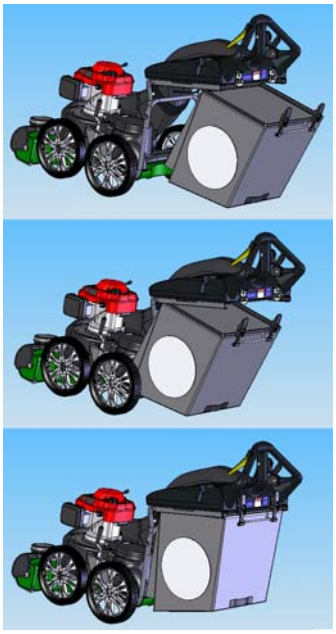
TOOLS REQUIRED Two 9/16" wrenches.

9. Install cable ty wraps.



10. Reconnect spark plug wire.

11. Attach the bag.



OPERATION

- **DO NOT** run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless and possibly fatal poison.
- **DO NOT** start or operate engine if strong odor of gasoline is present.
- **DO NOT** start or operate engine if gasoline is spilled. Move equipment away from spill until gasoline has completely evaporated.
- **DO NOT** operate engine without a muffler. Inspect muffler periodically and replace if necessary. If equipped with muffler deflector, inspect deflector periodically and replace if necessary.
- **DO NOT** operate engine with grass, leaves, or other combustible material near the muffler.
- **DO NOT** touch muffler, cylinder or cooling fins while engine is running. Contact with hot surfaces may cause severe burns.
- **DO NOT** operate equipment with bystanders in or near the work area.
- **DO NOT** operate equipment with guards removed.
- **DO NOT** operate equipment in areas containing rock, glass, string-like material, wire, rags, cans, metal, or other non-organic material.
- **DO NOT** operate equipment on slopes greater than specified in Specifications section of this manual.
- **DO NOT** operate equipment near hot or burning debris or any toxic or explosive materials.
- **DO NOT** allow children to operate this equipment.

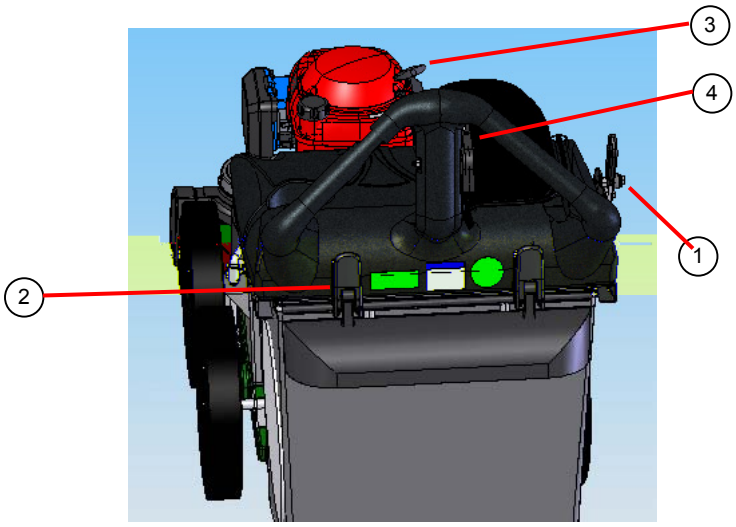
ALWAYS keep hands and feet away from moving or rotating parts.

EAR PROTECTION is recommended when operating this equipment.

EYE PROTECTION is recommended when operating this equipment.

OPERATOR CONTROLS

The operator's position is at the rear of the machine between the handlebars. The operator should STAND in a position to allow both handlebars to be grasped firmly, which allows sufficient leverage to steer the machine. Operator's controls are shown below.



Operator Control Locations

1 Nozzle Door Adjuster
2 Bag Latch
3 Pull Starter
4 Throttle Control

STARTING

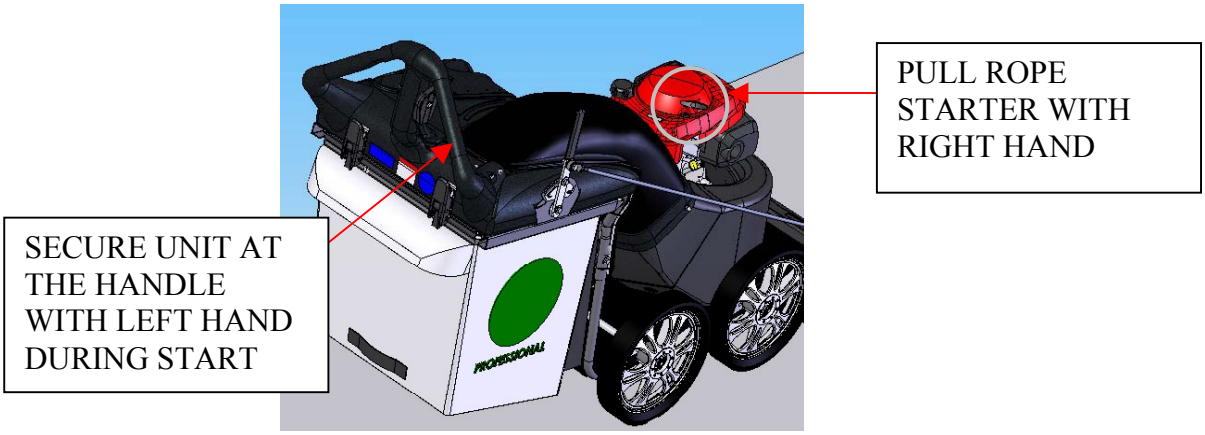
CHECK engine oil level before operating machine.

1. Place equipment on a level, firm surface that is free of rocks or other debris.
2. Place throttle in CHOKE position.

Throttle

WARNING: **DO NOT START** equipment without the debris bag in place.

3. Secure the unit with left hand at the handle then pull starter rope with right hand to start engine.

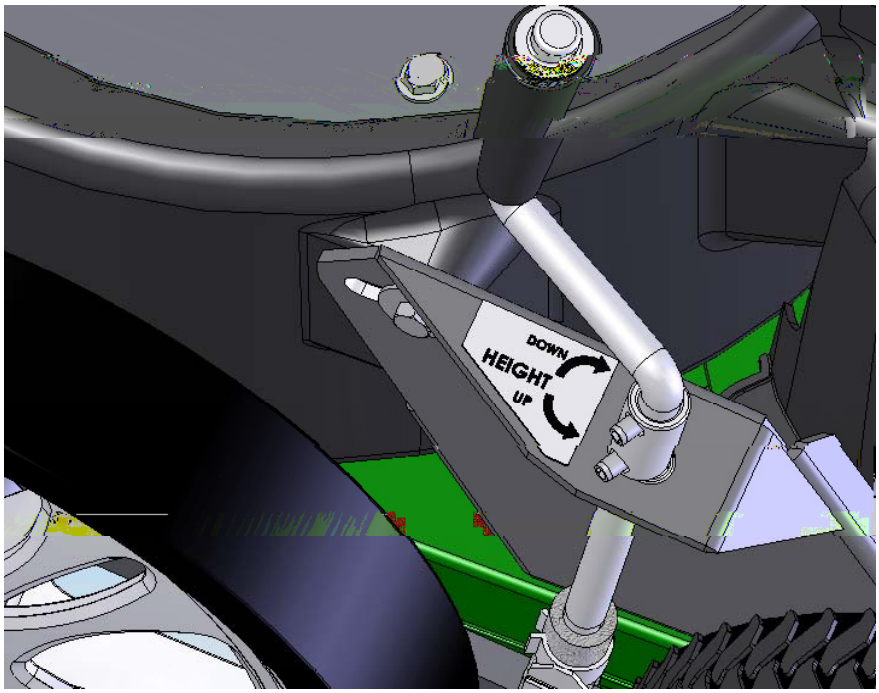


WARNING: **PULL STARTER CORD** slowly until resistance is felt. Then pull cord rapidly to avoid kickback.

4. Move throttle control back to RUN position and allow engine to reach correct operating speed.

VACUUM NOZZLE HEIGHT ADJUSTMENT

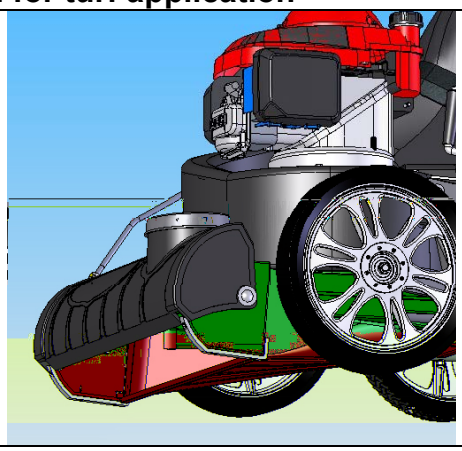
FOR MAXIMUM PICKUP: Adjust nozzle height as close to debris as possible, but without blocking airflow into the nozzle. *NOTE*: Never bury nozzle into debris. The vacuum nozzle is raised and lowered by turning the crank handle clockwise and counter-clockwise.



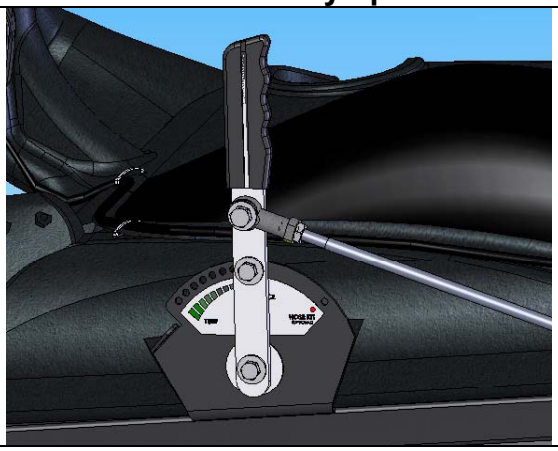
VACUUM NOZZLE DOOR ADJUSTMENT

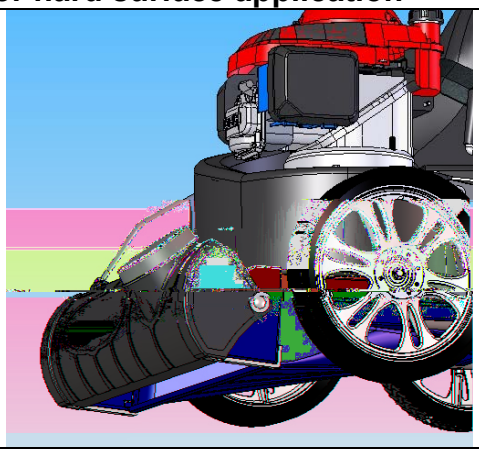
The vacuum nozzle door adjusts for the maximum performance under various applications.

Nozzle fully opened. This is ideal for turf application

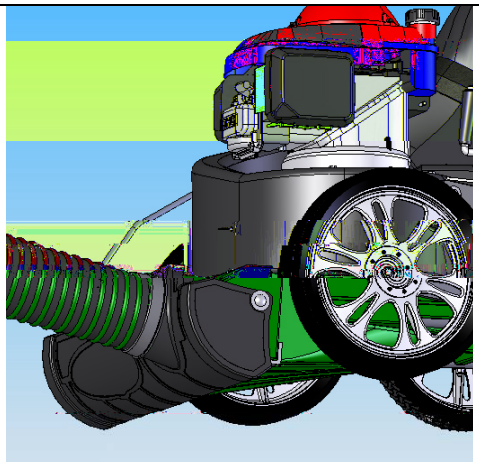


Nozzle half way opened. This is ideal for hard surface application





Nozzle closed for OPTIONAL hose kit. This is ideal TO USE WITH THE HOSE KIT.



VACUUMING OPERATION

This machine is designed for vacuuming leaves, grass clippings, and other types of organic litter. Debris mixed with cans, bottles, and small amounts of sand can be vacuumed; however, it is not this machine's primary purpose. Vacuuming cans, bottles, and sand will affect the longevity of your machine. In dusty conditions it maybe necessary to purchase Felt Bag Kit (P/N 840022).

Do not operate if excessive vibration occurs. If excessive vibration occurs, shut engine off immediately and check for damaged or worn impeller, loose impeller bolt, loose impeller key, loose engine or lodged foreign objects. Note: See parts list for proper impeller bolt torque specifications. (See trouble shooting section on page 22).

SHUT DOWN

1. Pull Throttle Control all the way back to the STOP position.

CLEARING A CLOGGED NOZZLE

DISCONNECT spark plug wire before servicing unit.

1. Shut engine off and wait for impeller to stop completely.
2. Disconnect spark plug wire.
3. Wearing durable gloves, remove clog.

WEAR durable gloves. Clog may contain sharp materials.

4. Reconnect spark plug wire.

DEBRIS BAG

Debris bags are normal replaceable wear items.

Frequently empty debris to prevent bag overloading with more weight than you can lift.

Bag liners are available for use in various conditions where debris will be vacuumed. (see Bag Liner Options shown on page 1).

DO NOT place bag on or near hot surface, such as engine.

Be sure engine has come to a complete stop before removing or emptying bag!!.

This vacuum is designed for picking up trash, organic material and other similar debris (see Safety Warnings page 4-5)**.**
Many vacuums are used where dust is mixed with trash. Your unit can intermittently vacuum in dusty areas. However, following these rules will help maintain your machine's ability to vacuum in dusty conditions:
•Run machine at idle to quarter throttle.
•Machine or pressure-wash debris bag if normal cleaning does not fully clean bag. Bag should be thoroughly dry before use.

Having one or more spare bags *(840189) is a good way to reduce down time while dirty bags are being cleaned.*

Hint! **Felt Bag (840194)** accessory is great when used in dusty conditions.

HANDLING and TRANSPORTING

Using two people to lift unit is recommended. Lift holding the handle and front of nozzle. Make sure equipment is properly secured before transporting. See MV650 series specifications on page 3 for unit weight.

WARNING: **NEVER** lift the machine while the engine is running.

STORAGE

WARNING: **DO NOT** store engine in an enclosed or poorly ventilated area where fuel fumes may reach an open flame or spark from a furnace, water heater, clothes dryer or similar devices.

DO NOT drain fuel in an enclosed or poorly ventilated area.

DO NOT smoke when draining fuel.

DO NOT remove gas cap while engine is running.

DO NOT park equipment on a steep grade or slope.

ALWAYS remove spark plug wire when servicing equipment to prevent accidental starting.

ALWAYS keep hands and feet away from moving or rotating parts.

ALWAYS store fuel in approved safety containers.

If the equipment will not be used for 30 days or more, prepare as follows:

1. Make sure engine is cool.
2. Drain gasoline from carburetor and fuel tank to prevent formation of gum deposits.
3. Run engine until tank is empty and engine runs out of gas.

NOTE Fuel stabilizer (such as Sta-Bil ™) is an acceptable alternative for minimizing the formation of gum deposits during storage. Add stabilizer to gasoline in storage container or fuel tank. Follow stabilizer manufacturer's instructions to determine proper mix ratio. Run engine at least 10 minutes after adding stabilizer to allow it to reach carburetor.

MAINTENANCE

PERIODIC MAINTENANCE

Periodic maintenance should be performed at the following intervals:

Maintenance Operation	Every Use	Daily or Every 5 Hours	Every 25 Hours	Every 50 Hours	Every 100-150 Hours
Inspect for worn or damaged parts.	●				
Check for excessive vibration		●			
Inspect for loose parts.		●			
Clean Debris Bag	●				
Lubricate throttle control cable and linkage. **NOTE:** Use white lithium grease or equivalent			●		

IMPELLER REMOVAL

READ all safety instructions before servicing unit.

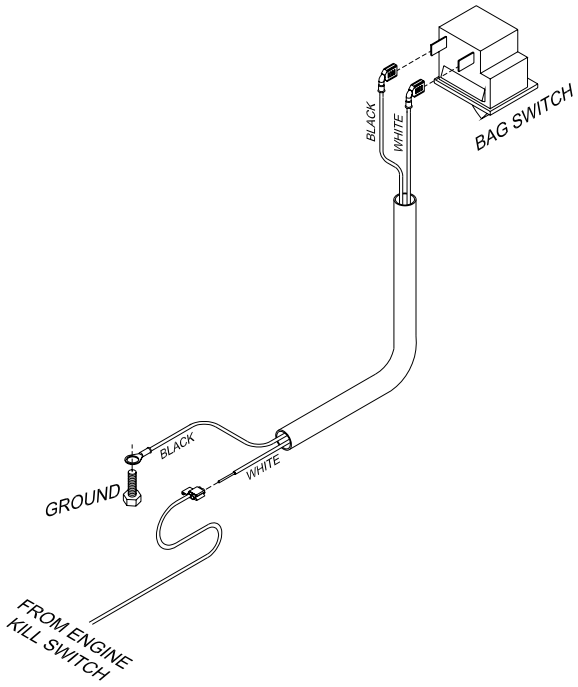
DISCONNECT spark plug wire before servicing unit.

Tools required:

- 1/2" socket, 3/8" drive and 3/8" ratchet
- drive extension, 3/8" drive
- universal joint, 3/8" drive
- pry bar or long screwdriver
- jack stands or similar device adequate to support weight of machine.

1. Wait for engine to cool and disconnect spark plug.
2. Drain fuel and oil from the engine.
3. Remove engine, impeller and mounting plate by removing bolts around outside of housing.
4. Leaving engine fastened to plate, remove impeller bolt and lock washer and slide impeller off crankshaft (A puller may be required). ***CAUTION:*** Do not drop impeller.
5. If impeller does not slide off crankshaft, place two crowbars between impeller and housing on opposite sides. Pry impeller away from engine until it loosens. *Using a penetrating oil can help loosen a stuck impeller.*
6. If the impeller cannot be loosened, obtain a 3/8-24x3 ¾" longer bolt of the same diameter and thread type as the impeller bolt. Invert engine and impeller and support engine above ground to prevent recoil damage. Thread longer bolt by hand into the crankshaft until bolt bottoms. Using a suitable gear or wheel puller against the bolt head and the impeller back-plate (near the blades), remove impeller from shaft.
7. To reinstall impeller, use a new impeller bolt and lockwasher
8. Tighten impeller bolt. Torque impeller bolt to 50 Ft. Lbs. (68 N.m).
9. Reinstall engine, impeller, and mounting plate onto housing in reverse order of removal.
10. Before connecting spark plug wire, slowly pull engine starting rope to insure that impeller rotates freely.
11. Reconnect spark plug wire.

WIRING DIAGRAMS



Bag Switch Circuit Schematic Diagram

TROUBLESHOOTING

Problem	Possible Cause	Solution
Will not vacuum or has poor vacuum performance.	· Dirty or full debris bag or filter.	· Clean debris bag and filter. Shake bag clean or wash.
	· Nozzle height set too high or too low.	· Adjust nozzle height (see page 14).
	· Hose kit cap missing.	· Check for hose kit cap.
	· Clogged nozzle or exhaust.	· Unclog nozzle or exhaust (see page 16)
	· Excessive quantity of debris.	· Allow air to feed with debris.
Abnormal vibration.	· Loose or out of balance impeller.	· Check impeller and replace if required.
	· Loose engine.	· Check engine (see page 24).
Engine will not start.	· Throttle in off position.	· Check throttle control (see page 13).
	· Engine not in full choke position.	· Check throttle, choke position (see page 13).
	· Out of gasoline or bad, old gasoline.	· Check gasoline.
	· Spark Plug wire disconnected.	· Connect spark plug wire.
	· Gas valve off.	· Turn on gas valve.
	· Dirty air cleaner.	· Clean or replace air cleaner. Contact a qualified service person.
	· Safety Interlock disengaged on bag plate.	· Latch the bag properly or check thr bag rod to see if it's bent.
Engine is locked, will not pull over.	· Impeller plugged or clogged.	· Remove debris (see page 16).
	· Engine problem.	· Contact an engine servicing dealer for engine problems.

ENGINE MAINTENANCE AND REPAIR

Refer to the engine manufacturer's manual for maintenance and service information. Warranty coverage on the engine is the responsibility of the engine manufacturer. If your engine requires warranty repair contact your local servicing engine dealer. Have your engine model number and serial number ready when you contact the dealer. If you cannot locate a servicing dealer in your area, you may contact the manufacturer's national service organization at the following numbers:

American Honda	(800) 426-7701

WARRANTY CLAIM PROCEDURE

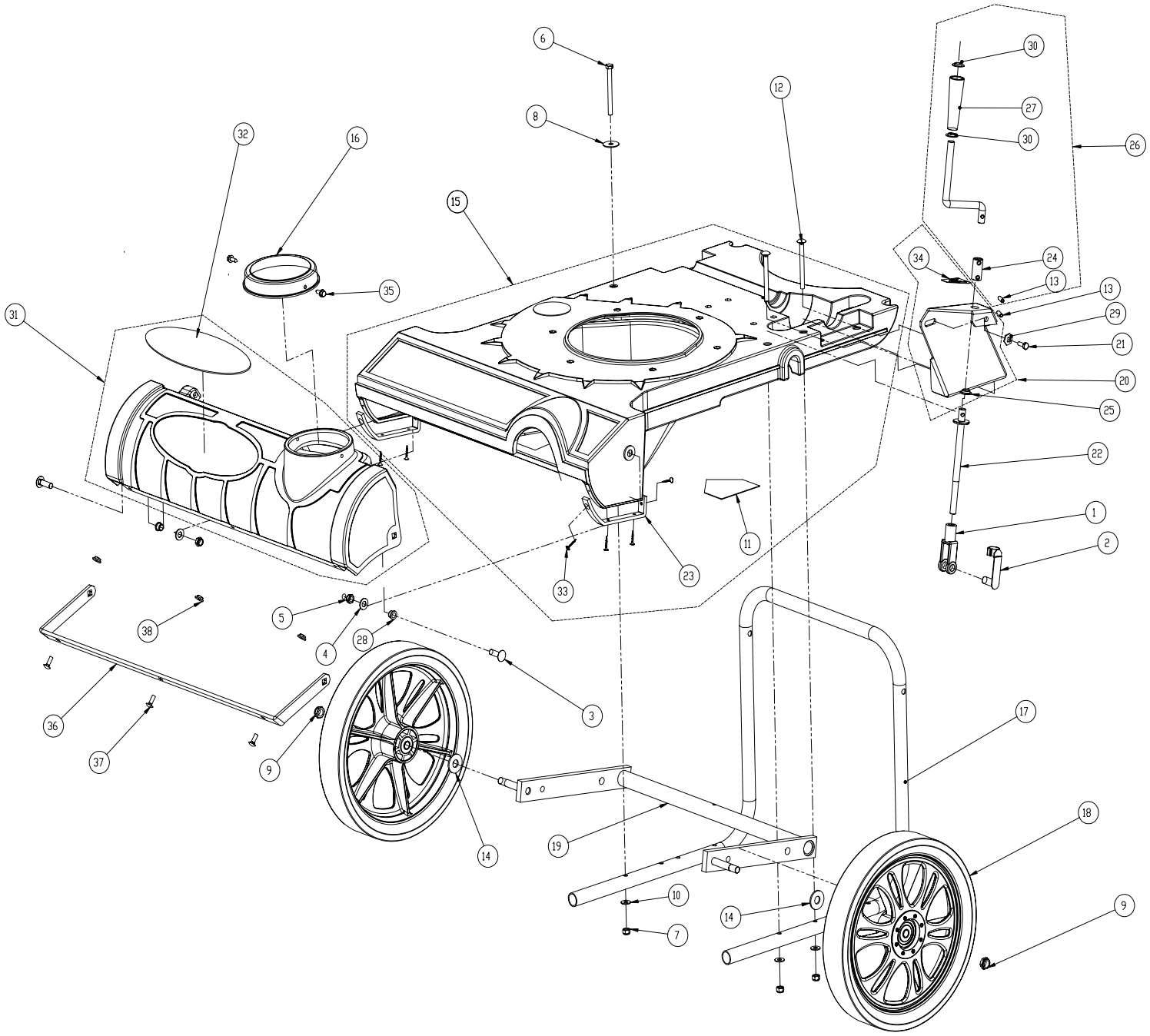
Should a BILLY GOAT ® machine fail due to a defect in material and/or workmanship, the owner should make a warranty claim as follows:

- The machine must be taken to the dealer from whom it was purchased or to an authorized Servicing BILLY GOAT Dealer.
- The owner must present the remaining half of the Warranty Registration Card, or, if this is not available, the invoice or receipt.
- The Warranty Claim will be completed by the authorized BILLY GOAT Dealer and submitted to their respective BILLY GOAT Distributor for their territory Attention: Service Manager. Any parts replaced under warranty must be tagged and retained for 90 days. The model number and serial number of the unit must be stated in the Warranty Claim.
- The distributor service manager will sign off on the claim and submit it to BILLY GOAT for consideration.
- The Technical Service Department at BILLY GOAT will study the claim and may request parts to be returned for examination. BILLY GOAT will notify their conclusions to the distributor service manager from whom the claim was received.
- The decision by the Technical Service Department at BILLY GOAT to approve or reject a Warranty Claim is final and binding.

MAINTENANCE RECORD

Date	Service Performed

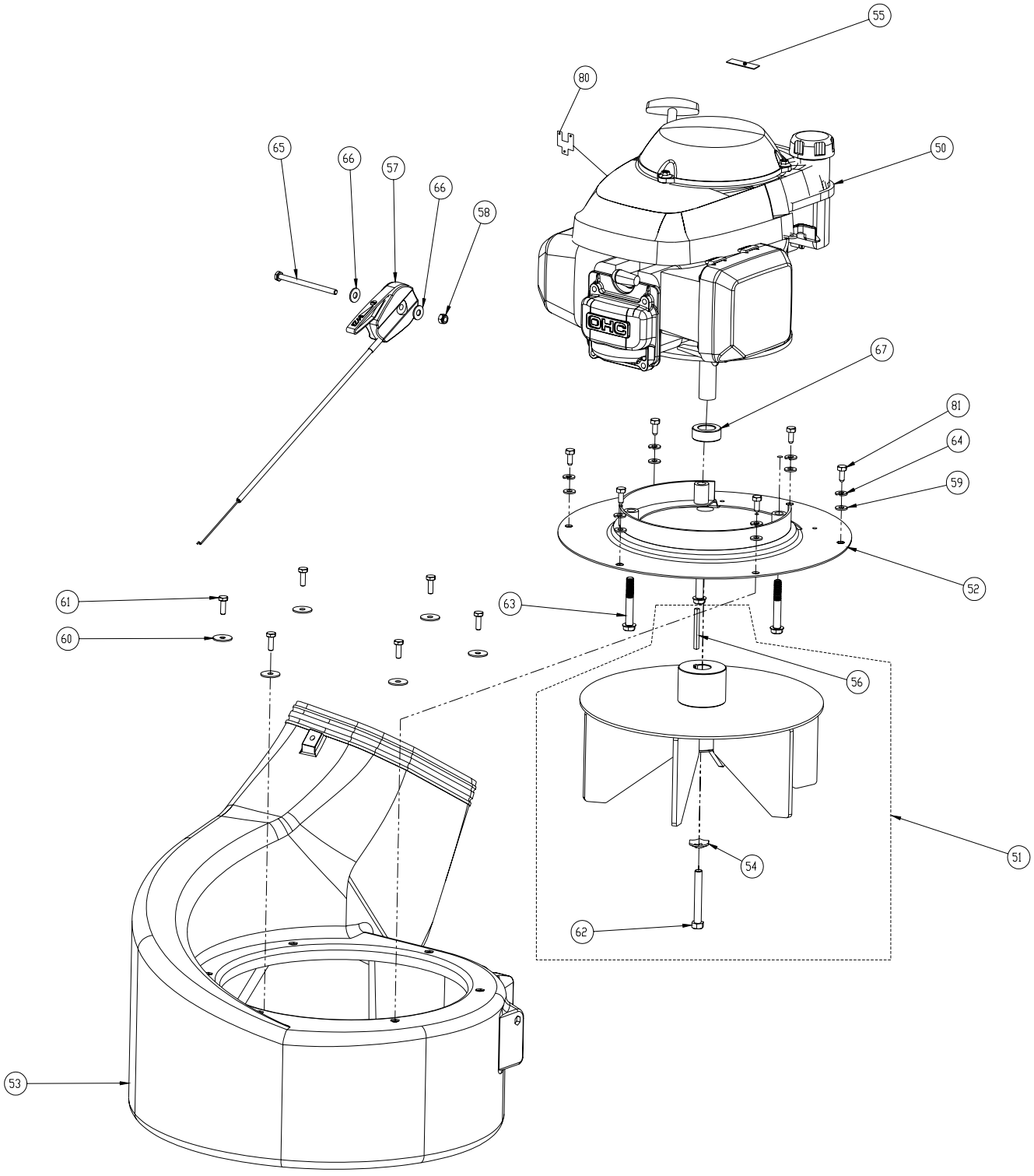
ILLUSTRATED PARTS LIST



Nozzle Assembly
Figure 1

Nozzle Assembly Parts List

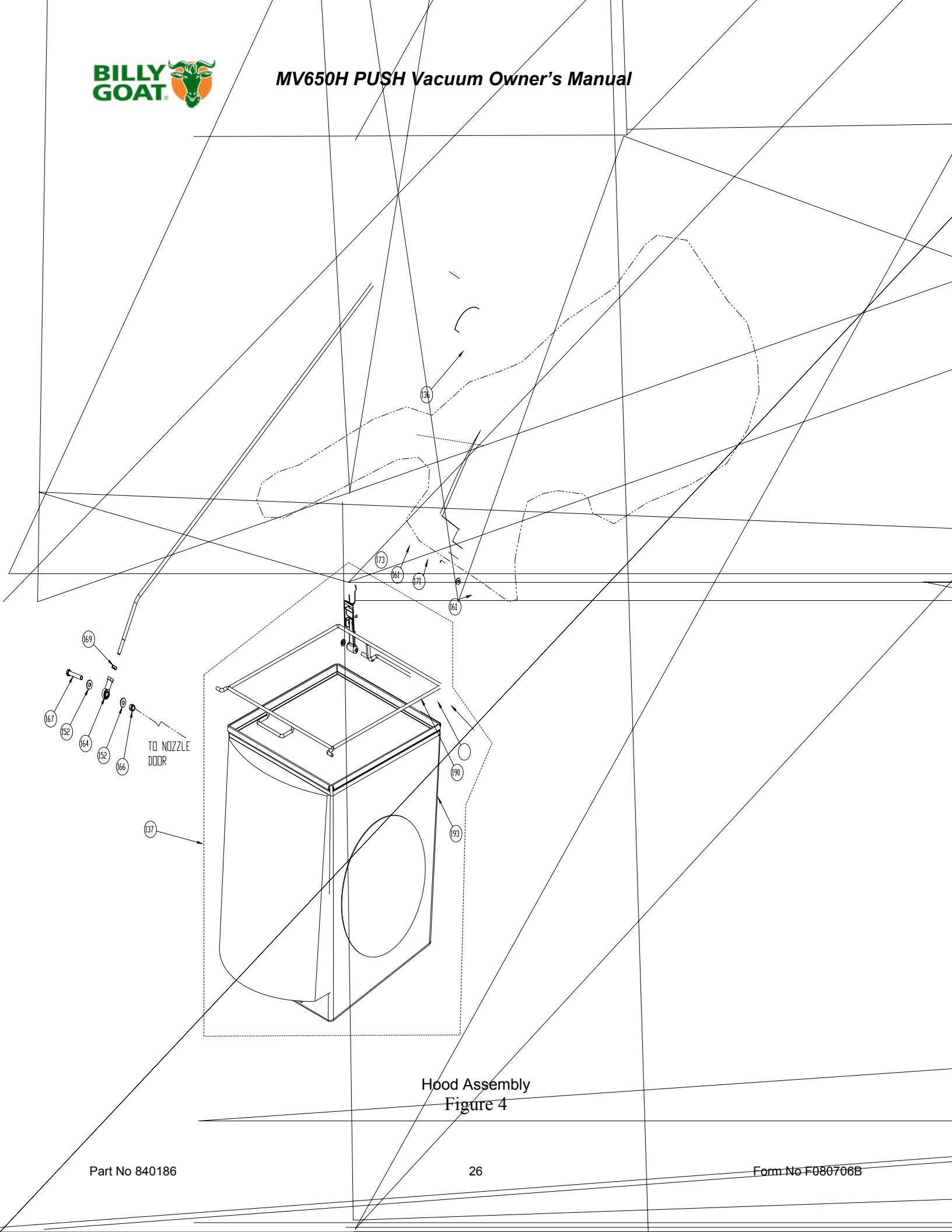
ITEM NO.	PART NUMBER	DESCRIPTION	MV650H QTY.
1	350127	YOKE 1/2 - 20	1
2	350128	PIN YOKE 1/2"	1
3	8024060	BOLT CARRIAGE 3/8-16X1 1/2" ZP	2
4	8172009	WASHER 3/8" SAE ZP	2
5	8161042	NUT LOCK 3/8-16 LT WT THIN ZP	2
6	8041038	SCREWCAP 5/16 -18 x 3 1/2	1
7	8160002	NYLON INSERT LOCKNUT 5/16-18 UNC	3
8	8172020	WASHER FLAT FENDER 5/16	1
9	8161044	NYLON INSERT LOCKNUT 1/2-13 UNC THIN	2
10	8171002	WASHER 1/4" FC ZP	3
11	400424	LABEL WARNING OPEI	1
12	8024050	BOLTCARRIAGE 5\16-18X3 1\2	2
13	520156	ROLL PIN 1/4 X 1 LONG	2
14	8172011	WASHER 1/2" SAE ZP	2
15	840118	NOZZLE MV VAC ASSEMBLY	1
16	840019	CAP 5 IN HOSE VAC	1
17	840024	HANDLE LOWER MV VAC	1
18	840101	WHEEL 14" ASSEMBLY WITH BEARING AND TIRE	2
19	840104	AXLE FRONT WA MV VAC	1
20	840155	HGT ADJ WA W/LABEL MV VAC	1
21	8041004	SCREWCAP 1/4 - 20 x 0.75 HWH	1
22	840034	LINK HGT ADJ MV VAC	1
23	840041	BRACKET NOZZLE WEAR GUARD MV VAC	2
24	840029	ROD CONNECT HGT ADJ	1
25	840073	BUSHING 0.5" ID 0.625 OD X X 0.250	1
26	840119	ROD HANDLE CRANK ASSEMBLY	1
27	840057	HANDLE CRANK 0.5 ID X 3.72 LONG	1
28	840078	BUSHING 3/8" ID 1/2" OD X 3/8" LONG	2
29	840158	WASHER LOCK 1/4" TWISTED TOOTH	1
30	840207	NUT PAL 0.5" ID X 0.75 OD	2
31	840135	NOZZLE COVER MV VAC	1
32	840055	LABEL PRODUCT DECAL MV	1
33	840035	SCREW PLASTIC	8
34	840054	LABEL HGT ADJ MV VAC	1
35	8122082	SCREW SELF-TAP 5/16 NC X 3/4 HEX	2
36	840088	BRACKET NOZZLE COVER REINFORMENT MV	1
37	8024021	BOLT CARRIAGE 1/4-20X0.75	3
38	900455	NUT FLANGE 1/4-20	3



Engine Assembly
Figure 3

Engine Assembly Parts List

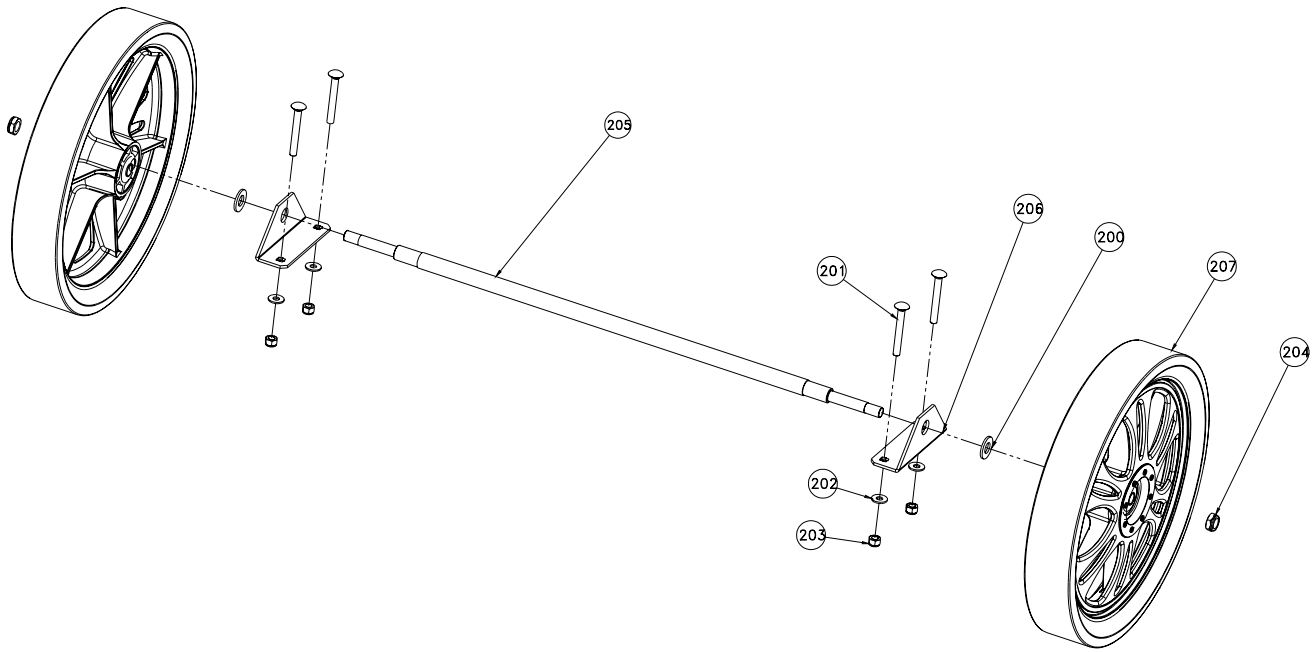
ITEM NO.	PART NUMBER	DESCRIPTION	MV650H QTY.
50	840069	ENGINE HONDA 6.5 VERTICAL GSV190	1
51	840137	IMPELLER ASSEMBLY PUSH MV VAC	1
52	840111	PLATE TOP WA PUSH MV VAC	1
53	840205	HOUSING PLASTIC VAC	1
54	400502	WASHER LOCK 3/8 TWISTED TOOTH	1
55	400268	LABEL HOT ENGINE	1
56	9201087	SQ KEY 2.125 X .187	1
57	840045	CONTROL THROTTLE MV VAC	1
58	8160001	NYLON INSERT LOCKNUT 1/4-20 UNC	1
59	8172007	WASHER 1/4" SAE ZP	6
60	8172019	WASHER FENDER 1/4 ZP	6
61	8041004	SCREWCAP 1/4 - 20 x 0.75 HWH	6
62	790167	SCREWCAP 3/8-24X2 3/4" W/PATCH LOCK	1
63	900564	SCREWCAP 3/8"-16X2 1/2" TAPTITE	3
64	8177010	WASHER SPLIT LOCK 1/4"	6
65	8041018	SCREWCAP 1/4"-20X4" HCS ZP	1
66	8171002	WASHER 1/4" FC ZP	2
67	840083	SPACER 1.50OD X .875ID X .5 THK	1
80	890010	PIGGY BACK TERMINAL 5/16	1
81	840213	SCREWCAP 1/4-20X5/8 GR. 5	6



Hood Assembly
Figure 4

Hood Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	MV650H QTY.
130	840141	HOOD ASSY W/ LABEL MV VAC	1
131	840153	BRACKET BAG CHANNEL RH W/SEAL MV VAC	1
132	840196	SEAL BAG MV VAC	1
133	840037	TUBE HANDLE BRACE RH MV VAC	1
134	840038	TUBE HANDLE BRACE LH MV VAC	1
135	840154	BRACKET BAG CHANNEL RH W/SEAL MV VAC	1
136	840152	BRACKET NOZZLE DOOR ADJ W/LABEL MV VAC	1
137	840195	BAG ASSEMBLY MV VAC	1
138	840138	BAR LIFT NOZZLE DOOR W/ GRIP MV VAC	1
139	840061	ROD LIFT NOZZLE DOOR SP VAC	1
140	840062	PLATE BAG LATCH MV VAC	2
141	840191	GRIP LEVER LIFT	1
142	840058	SWITCH INTERLOCK VAC	1
143	840077	HARNESS WIRE ASSY MV VAC	1
144	8024025	BOLT CARRIAGE 1/4-20 X 1.75	7
145	8171002	WASHER 1/4" FC ZP	14
146	8160001	NYLON INSERT LOCKNUT 1/4-20 UNC	13
147	520018	SCREW HEX HEAD #10-24 X 1"	4
148	8172005	WASHER #10 SAE ZP	8
149	8164005	NYLON INSERT LOCKNUT 10-24 UNC	4
150	900407	TY WRAP	6
151	610347	PIN SCREW 1/4-28	1
152	8171003	WASHER 5/16 FLATWASHER Z/P	11
153	8160002	NYLON INSERT LOCKNUT 5/16-18 UNC	3
154	610429	SPRING LEVER GZ	1
155	610348	FIBRE WASHER	1
156	8041032	SCREW CAP 5/16"-18 X 2 ZP	1
157			
158	8041006	SCREW CAP 1/4-20X1" ZP	2
159	8041031	SCREW CAP 5/16-18 X 1.75 ZP	2
160			
161	8172007	WASHER 1/4" SAE ZP	6
162	890254	LABEL EAR EYE BREATHING	1
163	890301	LABEL READ	1
164	400886	ROD END BALL JOINT 3/8 NF	2
165	8041052	SCREW CAP 3/8-16X1 1/2 ZP	1
166	8160003	NYLON INSERT LOCKNUT 3/8-16 UNC	2
167	8041056	SCREW CAP 3/8"-16X2 1/2" ZP	1
168	840197	SEAL BAG FRONT HOOD 20.5 LONG	1
169	8149003	NUT REG 3/8-24 NF	2
170	8041004	SCREW CAP 1/4"-20X3/4" HCS ZP	1
171	8172019	WASHER FENDER 1/4 ZP	7
172	8041018	SCREW CAP 1/4"-20X4" HCS ZP	1
173	840071	NUT ACORN 1/4-20	2
174	810736	LABEL DANGER FLYING DEBRIS	1
175	840080	LABEL NOZZLE DOOR MV VAC	1
178	8024021	BOLT CARRIAGE 1/4-20 X 3/4"	5
180	840214	BRACKET HOOD FRONT STRAIGHTENER	1
188	840113	PLUG SNAP RIVET 0.166 DIA	2
189	840114	PLUG SNAP RIVET 0.232 DIA	
190	840040	ROD BAG WA MV VAC	1
191	840139	LATCH RUBBER ASSEMBLY MV VAC	2
192	360203	PAL NUT 0.312	2
193	840189	BAG DEBRIS MV VAC	1



Rear Axle Assembly
Figure 2

Rear Axle Assembly Parts List

ITEM NO.	PART NUMBER	DESCRIPTION	MV650H QTY.
200	8172011	WASHER FLAT 1/2" SAE	2
201	8024046	BOLT CARRIAGE 5/16-18X2 1/2	4
202	8171002	WASHER 1/4" FC ZP	4
203	8160002	NYLON INSERT LOCKNUT 5/16-18 UNC	4
204	8161044	NYLON INSERT LOCKNUT 1/2-13 UNC THIN	2
205	840091	SHAFT REAR AXLE PUSH VAC	1
206	840090	BRACKET REAR AXLE MOUNT PUSH MV VAC	2
207	840101	WHEEL 14" ASSEMBLY WITH BEARING AND TIRE	2